



**Sewage Treatment Plant Upgrades, Phase III
Stockpiled Soil from Operable Unit No. 9
Sample and Analysis Report**

Rocky Flats Environmental Technology Site

Prepared by

Rocky Mountain Remediation Services, L. L. C.

July 1997

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BZ-A-000578

SEWAGE TREATMENT PLANT UPGRADES, PHASE III

STOCKPILED SOIL FROM OPERABLE UNIT NO.9

SAMPLE AND ANALYSIS REPORT

1.0 INTRODUCTION

This report was developed to support the proper disposition of stockpiled soil associated with Phase III of the Sewage Treatment Plant (STP) upgrades at the Rocky Flats Environmental Technology Site (RFETS).

In May 1996, efforts were made to locate a waste line consisting of 6-inch vitrified clay pipe. A portion of the pipe was located in the proposed STP effluent site, designated as an Individual Hazardous Substance Site (IHSS), and known as Operable Unit No. 9 (OU 9). A backhoe was used to excavate four pilot holes, in an attempt to locate the pipe. Radiological Control Technicians (RCTs) screened each bucket of soil, as it was generated, for radionuclides with a Field Instrument for the Detection of Low Energy Radiation (FIDLER). K-H Radiological Engineering had established a background measurement of 2000 cpm, based on past FIDLER surveys conducted over the entire plant site. Approximately 1000 yd³ of soil containing levels less than twice background (<4000 cpm) were stockpiled in the northwest end of the site (Figure 1.1). A sampling plan was developed to more thoroughly define levels of radioactivity in the stockpiled soil. This report documents soil sampling activities conducted on March 20, 1997.

2.0 PURPOSE

This sampling event was conducted to determine if the soil meets the radiological Tier II "put back" criteria defined by the Rocky Flats Cleanup Agreement (RFCA) Working Group and regulated under the Atomic Energy Act through 10 CFR 835 and DOE Order 5400.5. These criteria are indicated in the document *Final Rocky Flats Cleanup Agreement* (DOE 1996) and tabulated in Attachment A.

3.0 SAMPLING ACTIVITIES

A total of six (6) samples, including one (1) field duplicate, was collected from a large stockpile of soil located on the northwest end of the STP site, at locations indicated in Figure 3-1. The field duplicate was collected to correspond with the easternmost sample location. Each sample was given a unique temporary identification number which was correlated to a sample code assigned by the Analytical Projects Office (APO). The temporary sample numbers will be used in this report.

Sample collection followed *Environmental Management Department (EMD) Operating Procedures Volume/Field Operations 5-21000-0PS-FO.0.03, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples, Volume 1*. Samples were collected using a 4'-long, 2"-diameter, stainless-steel hand auger, with an 8" core barrel, in alphanumeric order. Simultaneous pressure and rotation were applied to the auger until the core barrel was filled, and the recovered soil was placed in a Ziploc bag. This process was repeated using the same auger hole until refusal. Following the collection of each sample, the soil was composited within the Ziploc bag, and approximately 100g of soil was removed from the bag with a small disposable plastic scoop and placed in a pre-labeled, 250ml glass jar. An RCT scanned each sample jar with a FIDLER. Equipment was also monitored for radiological contamination during sampling activities. All

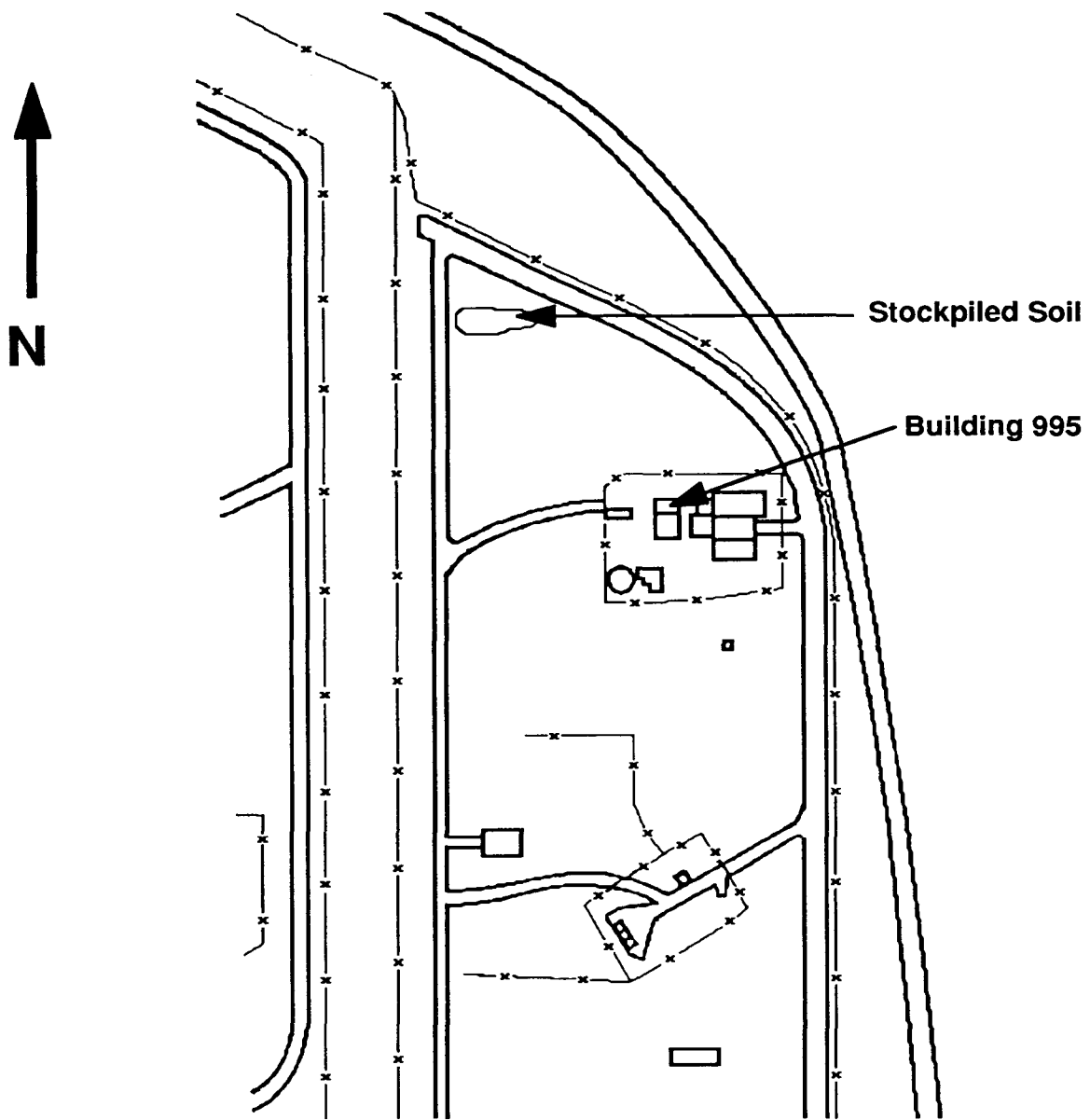


Figure 1.1. Location of Stockpiled Soil at the Sewage Treatment Plant

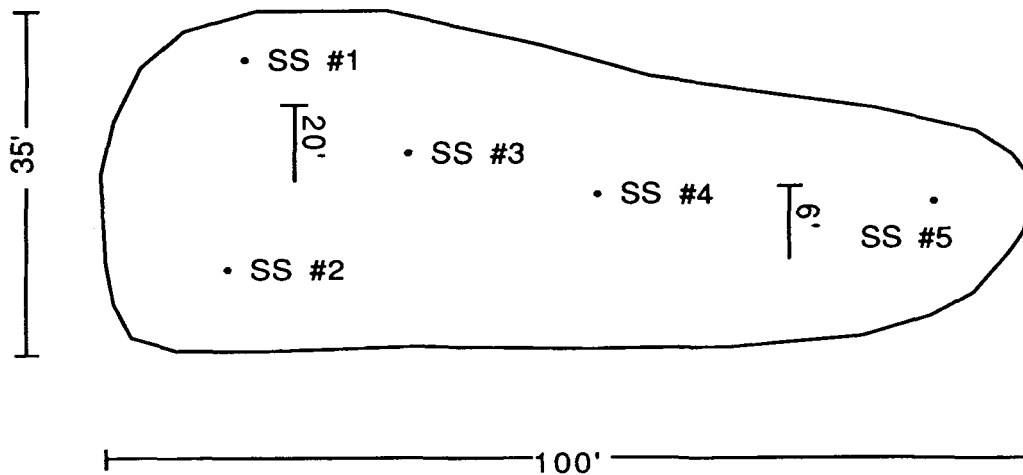


Figure 3.1. Soil Sample Locations

sampling equipment was decontaminated with an Alconox solution and rinsed with deionized water. Two hand augers were rotated throughout the sampling process to increase efficiency.

A sample receipt was generated by the Analytical Projects Office (APO) following the sampling event was generated following collection of each sample. The receipt outlines analyses requested, and Rocky Flats Environmental Database Group-assigned sample identification codes. The receipt is included as Attachment B.

3.0 ANALYTICAL PROCEDURES

Isotopics analyses were performed by Quanterra Laboratories. The analysis is performed by separating isotopes from the prepared sample by using ion-exchange and chromatographic extraction techniques. The sample is then electrodeposited onto counting planchets and analyzed by alpha spectrometry.

4.0 ANALYSES RESULTS

A summary of sample analyses results are included as Attachment C. A copy of the laboratory report is included as Attachment D. All results were significantly below Tier II action levels. The highest concentrations of Am 241 were detected in Sample 3, which indicated 1.03 pCi/g. All of the six (6) samples contained detectable amounts of Pu 238, at a range of 1.04 to 1.35 pCi/g, and Pu 234 at a range of 0.85 to 1.23 pCi/g. All remaining results were below 1.0 pCi/g.

5.0 ATTACHMENTS

- 5.1 Attachment A: Rocky Flats Cleanup Agreement (RFCA) Tier II Soil Action Levels
- 5.1 Attachment B: APO Sample Receipt
- 5.2 Attachment C: Summary of Laboratory Analyses Results
- 5.3 Attachment D: Laboratory Analyses Results

6.0 REFERENCES

DOE 1996. *Final Rocky Flats Cleanup Agreement*, July.

RMRS 1997. *Field Sampling Plan to Support the Final Disposition of Soil from the Operable Unit No. 9 Source Removal Project*, February.

RMRS 1997. *Field Sampling Plan to Support the Final Disposition of Stockpiled Soil from the Operable Unit No. 9 Source Removal Project*, April.

RMRS 1997. *Sewage Treatment Plant Upgrades, Phase III Containerized Soil from Operable Unit No. 9 Sample and Analysis Report*, April.

ATTACHMENT A:
Rocky Flats Cleanup Agreement (RFCA) Tier II Soil Action Levels

Isotope	Tier II Action Level (pCi/g)	Background (pCi/g)
Americium-241	38	0.0227
Plutonium-238	270	
Plutonium-239	252	0.066
Plutonium-240	253	0.066
Plutonium-241	3499	
Plutonium-242	266	
Uranium-234	307	2.253
Uranium-235	24	0.94
Uranium-238	103	2.00

ATTACHMENT B:
APO Sample Receipt

APO SAMPLE RECEIPT

This sample receipt is supplied to waste generators as notification of sample collection. Inquiries into the status of this sample may be directed to the Analytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771. The APO references samples by the following identification numbers:

Report ID: 97L1426	Waste Stream ID:
APO Event: 97L1426-001	Customer Sample ID: SAMPLE1
Duplicate ID:	Field Blank ID:
Issue Date: 03/18/97	Equipment Blank ID:
	Trip Blank ID:

Sample Description: SOIL SAMPLES
Other Id:
Sample Location: STOCKPILED SOIL N OF B995 AREA

Analyses Requested:	Bottle ID
-----	-----
ALPHA/BETA SCREEN (RADSCREENS)	97L1426-001.001
AM ISOTOPIC	97L1426-001.002
ISO-PLUTONIUM	97L1426-001.002
U233/234,235,238 OR ISO-URANIUM	97L1426-001.002
ALPHA/BETA SCREEN (RADSCREENS)	97L1426-002.003
AM ISOTOPIC	97L1426-002.004
ISO-PLUTONIUM	97L1426-002.004
U233/234,235,238 OR ISO-URANIUM	97L1426-002.004
ALPHA/BETA SCREEN (RADSCREENS)	97L1426-003.005
AM ISOTOPIC	97L1426-003.006
ISO-PLUTONIUM	97L1426-003.006
U233/234,235,238 OR ISO-URANIUM	97L1426-003.006
ALPHA/BETA SCREEN (RADSCREENS)	97L1426-004.007
AM ISOTOPIC	97L1426-004.008
ISO-PLUTONIUM	97L1426-004.008
U233/234,235,238 OR ISO-URANIUM	97L1426-004.008
ALPHA/BETA SCREEN (RADSCREENS)	97L1426-005.009
AM ISOTOPIC	97L1426-005.010
ISO-PLUTONIUM	97L1426-005.010
U233/234,235,238 OR ISO-URANIUM	97L1426-005.010
ALPHA/BETA SCREEN (RADSCREENS)	97L1426-006.011
AM ISOTOPIC	97L1426-006.012
ISO-PLUTONIUM	97L1426-006.012
U233/234,235,238 OR ISO-URANIUM	97L1426-006.012

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APO SAMPLE RECEIPT

This sample receipt is supplied to waste generators as notification of sample collection. Inquiries into the status of this sample may be directed to the Analytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771. The APO references samples by the following identification numbers:

Report ID: 97L1426	Waste Stream ID:
APO Event: 97L1426-001	Customer Sample ID: SAMPLE1
Duplicate ID:	Field Blank ID:
Issue Date: 03/18/97	Equipment Blank ID:
	Trip Blank ID:

Sample Description: SOIL SAMPLES
Other Id:
Sample Location: STOCKPILED SOIL N OF B995 AREA

Analyses Requested:	Bottle ID
-----	-----

Date Sampled: 3-20-97
Process Contact: KIRK HILBELINK
Alternate Contact: MARY AYCOCK

Phone	Pager
UNK	5833
5309	7508

Returning Excess Sample Material

Unmodified sample material remaining after analysis is generally returned to the generator. The generator must be prepared to receive and dispose of excess sample material for applicable state and federal regulations. Regulatory exclusions for returning excess sample material are specified in the Code of Colorado Regulations (CCR) 1007-3, Part 261.4(d) 'Samples'. If problems with the disposal of excess sample material are encountered, the Environmental Coordinator for the generation area should be contacted for resolution of the issues. Only sample material which has not been modified during analysis will be returned. Material which has been acidified for preservation purposed will not be returned.

INTER-DEPARTMENT DELIVERY:

Deliver To:	
Building:	Organization:

Date: 03/18/97

Page: 5

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ATTACHMENT C:
Summary of Laboratory Analyses Results

Sheet1

Sample	Collected	Received	Nuclide	Results (pCi/g)	Counting Error (2s)	Total Error (2s)	MDA	Yield (%)	Method Number
1	03/20/97	03/27/97	Am241	0.0434	0.013	0.014	0.0079	88.80	RICHRC5057
			U234	1.02	0.094	0.014	0.0226	78.60	RICHRC5030
			U235	0.0396	0.02	0.02	0.0185	78.60	RICHRC5030
			U238	1.07	0.096	0.015	0.0058	78.60	RICHRC5030
			Pu238	0.0116	0.015	0.015	0.0249	23.70	RICHRC5010
			Pu239/40	0.0761	0.035	0.037	0.0337	23.70	RICHRC5010
2	03/20/97	03/27/97	Am241	0.148	0.023	0.027	0.0023	93.10	RICHRC5057
			U234	1.08	0.093	0.14	0.0211	81.10	RICHRC5030
			U235	0.0346	0.017	0.018	0.0138	81.10	RICHRC5030
			U238	1.14	0.096	0.15	0.0157	81.10	RICHRC5030
			Pu238	-0.0017	0.0024	0.0024	0.0146	29.40	RICHRC5010
			Pu239/40	0.119	0.032	0.035	0.0057	29.40	RICHRC5010
3	03/20/97	03/27/97	Am241	1.03	0.061	0.12	0.0051	87.30	RICHRC5057
			U234	0.849	0.87	0.12	0.0204	76.60	RICHRC5030
			U235	0.0396	0.019	0.019	0.006	76.60	RICHRC5030
			U238	1.04	0.096	0.14	0.0172	76.60	RICHRC5030
			Pu238	0.0089	0.01	0.01	0.008	20.20	RICHRC5010
			Pu239/40	0.435	0.072	0.092	0.0167	20.20	RICHRC5010
4	03/20/97	03/27/97	Am241	0.123	0.021	0.025	0.079	85.80	RICHRC5057
			U234	1.23	0.23	0.31	0.0701	83.20	RICHRC5030
			U235	0.03	0.038	0.038	0.0498	83.20	RICHRC5030
			U238	1.16	0.23	0.30	0.0675	83.20	RICHRC5030
			Pu238	0.00	0.00	0.0067	0.0061	27.30	RICHRC5010
			Pu239/40	0.109	0.031	0.034	0.0126	27.30	RICHRC5010
5	03/20/97	03/27/97	Am241	0.0763	0.017	0.019	0.0067	85.90	RICHRC5057
			U234	1.18	0.22	0.29	0.0692	79.50	RICHRC5030
			U235	0.0836	0.063	0.064	0.0617	79.50	RICHRC5030
			U238	1.35	0.24	0.32	0.0669	79.50	RICHRC5030
			Pu238	-0.0015	0.0021	0.0021	0.0125	35.80	RICHRC5010
			Pu239/40	0.0573	0.021	0.022	0.0102	35.80	RICHRC5010
5DUP	03/20/97	03/27/97	Am241	0.105	0.023	0.026	0.0107	79.10	RICHRC5057
			U234	1.11	0.095	0.15	0.0254	79.20	RICHRC5030
			U235	0.0473	0.02	0.021	0.014	79.20	RICHRC5030
			U238	1.17	0.098	0.15	0.0235	79.20	RICHRC5030
			Pu238	0.0043	0.0079	0.0079	0.0152	23.40	RICHRC5010
			Pu239/40	0.0592	0.025	0.026	0.0073	23.40	RICHRC5010

ATTACHMENT D:
Laboratory Analyses Results

APR-21-97 MON 7:42

BLDG 881 ROOM 212

FAX NO. 303 966 3400

P.02

APR-18-1997 16:38

QUANTERRA, RICHLAND

303 373 3530

P.02

Analytical Data Package Prepared For

KAISER-HILL

Radiochemical Analysis By

Quanterra Environmental Services

Richland Laboratory

Sample Delivery Group Number: 8051

CLIENT ID NUMBER

QUANTERRA ID NUMBER

SAMPLE 1

70342101

SAMPLE 2

70342102

SAMPLE 3

70342103

SAMPLE 4

70342104

SAMPLE 5

70342105

SAM SDUP

70342106

97L1426

14

APR-21-97 MON 7:42

BLDG 881 ROOM 212

FAX NO. 303 966 3400

P. 03

APR-18-1997 16:39

QUANTERRA, RICHLAND

505 375 5570 F.W.

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland BLDG: 8051
LAB SAMPLE ID: 70342101 MATRIX: SOIL
CLIENT ID: SAMPLE 1 DATE RECEIVED: 3/27/1997 10:30:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.34E-02	1.3E-02	1.4E-02	7.87E-03	pCi/g	88.80%	RICHR05072
U-234	1.02E+00	9.4E-02	1.4E-01	2.26E-02	pCi/g	78.60%	RICHR05030
U-235	3.96E-02	2.0E-02	2.0E-02	1.85E-02	pCi/g	78.60%	RICHR05030
U-238	1.07E+00	9.6E-02	1.5E-01	6.82E-03	pCi/g	78.60%	RICHR05030
PU-238	1.16E-02	1.5E-02	1.5E-02	2.49E-02	pCi/g	23.70%	RICHR05010
PU239/40	7.61E-02	3.5E-02	3.7E-02	3.37E-02	pCi/g	23.70%	RICHR05010

Number of Results: 8

APR-21-97 MON 7:42
APR-18-1997 16:39

BLDG 881 ROOM 212
QUANTERRA, RICHLAND

FAX NO. 303 966 3400

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303 373 3330

11.04

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8051
LAB SAMPLE ID: 70342102 MATRIX: SOIL
CLIENT ID: SAMPLE 2 DATE RECEIVED: 3/27/1997 10:30:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.48E-01	2.3E-02	2.7E-02	2.32E-03	pCi/g	93.10%	RICHRC5072
U-234	1.08E+00	9.3E-02	1.4E-01	2.11E-02	pCi/g	81.10%	RICHRC5030
U-235	3.46E-02	1.7E-02	1.8E-02	1.38E-02	pCi/g	81.10%	RICHRC5030
U-238	1.14E+00	9.6E-02	1.5E-01	1.57E-02	pCi/g	81.10%	RICHRC5030
PU-238	-1.68E-03	2.4E-03	2.4E-03	1.46E-02	pCi/g	29.40%	RICHRC5010
PU239/40	1.18E-01	3.2E-02	3.5E-02	5.73E-03	pCi/g	29.40%	RICHRC5010

Number of Results: 6

16

APR-21-97 MON 7:43

BLDG 881 ROOM 212

FAX NO. 303 966 3400

P.05

APR-18-1997 16:39

QUANTERRA, RICHLAND

509 375 5590 P.05

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8051
LAB SAMPLE ID: 70342103 MATRIX: SOIL
CLIENT ID: SAMPLE 3 DATE RECEIVED: 3/27/1997 10:30:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.03E+00	6.1E-02	1.2E-01	5.07E-03	pCi/g	87.30%	RICHRC5072
U-234	8.48E-01	8.7E-02	1.2E-01	2.04E-02	pCi/g	76.60%	RICHRC5030
U-235	3.96E-02	1.9E-02	1.9E-02	5.95E-03	pCi/g	76.60%	RICHRC5030
U-238	1.04E+00	9.6E-02	1.4E-01	1.72E-02	pCi/g	76.60%	RICHRC5030
PU-238	8.85E-03	1.0E-02	1.0E-02	7.98E-03	pCi/g	20.20%	RICHRC5010
PU238/40	4.35E-01	7.2E-02	9.2E-02	1.67E-02	pCi/g	20.20%	RICHRC5010

Number of Results: 6

APR-21-97 MON 7:43

BLDG 881 ROOM 212

FAX NO. 303 966 3400

P.06

APR-18-1997 16:39

QUANTERRA, RICHLAND

509 375 5590

P.06

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8051
LAB SAMPLE ID: 70342104 MATRIX: SOIL
CLIENT ID: SAMPLE 4 DATE RECEIVED: 3/27/1997 10:30:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2σ)	TOTAL ERROR (2σ)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.23E-01	2.1E-02	2.5E-02	7.90E-03	pCi/g	85.80%	RICHRC5072
U-234	1.23E+00	2.3E-01	3.1E-01	7.01E-02	pCi/g	83.20%	RICHRC5030
U-235	3.10E-02	3.8E-02	3.8E-02	4.98E-02	pCi/g	83.20%	RICHRC5018
U-238	1.16E+00	2.3E-01	3.0E-01	8.75E-02	pCi/g	83.20%	RICHRC5016
PU-238	0.00E+00	0.0E+00	6.7E-03	6.05E-03	pCi/g	27.30%	RICHRC5010
PU239/40	1.08E-01	3.1E-02	3.4E-02	1.26E-02	pCi/g	27.30%	RICHRC5010

Number of Results:

18

APR-21-97 MON 7:43
APR-18-1997 16:40

BLDG 881 ROOM 212
QUANTERRA, RICHLAND

FAX NO. 303 966 3400
509 375 5590

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SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland BDG: 8051
LAB SAMPLE ID: 70342105 MATRIX: SOIL
CLIENT ID: SAMPLE 5 DATE RECEIVED: 3/27/1997 10:30:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	7.63E-02	1.7E-02	1.9E-02	6.70E-03	pCi/g	85.90%	RICHRC5072
U-234	1.18E+00	2.2E-01	2.6E-01	6.92E-02	pCi/g	79.50%	RICHRC5030
U-235	8.86E-02	6.3E-02	6.4E-02	8.17E-02	pCi/g	79.50%	RICHRC5030
U-238	1.35E+00	2.4E-01	3.2E-01	6.69E-02	pCi/g	79.50%	RICHRC5030
PU-238	-1.45E-03	2.1E-03	2.1E-03	1.25E-02	pCi/g	35.80%	RICHRC5010
PU239/40	5.73E-02	2.1E-02	2.2E-02	1.02E-02	pCi/g	35.80%	RICHRC5010

Number of Results: 6

APR-21-97 MON 7:43
APR-18-1997 16:40

BLDG 881 ROOM 212
QUANTERRA, RICHLAND

FAX NO. 303 966 3400
509 375 5590

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P. 08

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8051
LAB SAMPLE ID: 70342108 MATRIX: SOIL
CLIENT ID: SAM 5DUP DATE RECEIVED: 3/27/1997 10:30:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.05E-01	2.3E-02	2.6E-02	1.07E-02	pCi/g	79.10%	RICHRC5072
U-234	1.11E+00	9.5E-02	1.5E-01	2.54E-02	pCi/g	79.20%	RICHRC5030
U-235	4.73E-02	2.0E-02	2.1E-02	1.40E-02	pCi/g	79.20%	RICHRC5030
U-238	1.17E+00	9.8E-02	1.5E-01	2.35E-02	pCi/g	79.20%	RICHRC5030
PU-238	4.30E-03	7.9E-03	7.9E-03	1.52E-02	pCi/g	23.40%	RICHRC5010
PU239/40	5.92E-02	2.5E-02	2.6E-02	7.28E-03	pCi/g	23.40%	RICHRC5010

Number of Results: 8

APR-21-97 MON 7:43
APR-18-1997 16:40

BLDG 881 ROOM 212
QUANTERRA, RICHLAND

FAX NO. 303 966 3400
303 370 0000

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P. 09

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8051
LAB SAMPLE ID: R0342101 MATRIX: SOIL
CLIENT ID: SAMPLE 1 DATE RECEIVED: 3/27/1997 10:30:00
ORIG LAB SAMPLE ID: 70342101

ISOTOPE	DUP RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	5.10E-02	1.4E-02	1.5E-02	7.40E-03	pCi/g	82.20%	RICHRC5072	4.34E-02	16.12%
U-234	1.03E+00	9.8E-02	1.5E-01	2.56E-02	pCi/g	71.60%	RICHRC5030	1.02E+00	0.90%
U-235	6.13E-02	2.6E-02	2.6E-02	2.00E-02	pCi/g	71.60%	RICHRC5030	3.96E-02	43.15%
U-238	1.04E+00	9.9E-02	1.5E-01	1.81E-02	pCi/g	71.60%	RICHRC5030	1.07E+00	2.44%
PU-238	5.14E-03	1.3E-02	1.3E-02	2.94E-02	pCi/g	20.00%	RICHRC5010	1.18E-02	77.20%
PU-239/40	9.24E-02	4.0E-02	4.3E-02	2.42E-02	pCi/g	20.00%	RICHRC5010	7.61E-02	19.32%

Number of Results: 6

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8051
LAB SAMPLE ID: T034211B MATRIX: SOIL

ISOTOPE	RESULT	COUNTING ERROR (2σ)	TOTAL ERROR (2σ)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	2.71E-03	4.4E-03	4.4E-03	8.40E-03	pCi/g	89.70%	RICHRC5072
U-234	6.00E-03	6.2E-03	6.2E-03	1.31E-02	pCi/g	73.90%	RICHRC5030
U-235	-1.86E-03	2.6E-03	2.6E-03	1.59E-02	pCi/g	73.90%	RICHRC5030
U-238	-9.24E-04	1.8E-03	1.9E-03	1.31E-02	pCi/g	73.90%	RICHRC5030
PU-238	0.00E+00	0.0E+00	6.3E-03	4.78E-03	pCi/g	48.30%	RICHRC5010
PU238/40	1.06E-03	3.8E-03	3.8E-03	9.97E-03	pCi/g	48.30%	RICHRC5010

Number of Results: 6

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LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland

SDG: 8051

LAB SAMPLE ID: T034211S

MATRIX: SOIL

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	6.45E-01	4.9E-02	8.1E-02	5.20E-03	pCi/g	88.60%	6.79E-01	95.03%
U-234	1.74E+00	1.2E-01	2.1E-01	1.59E-02	pCi/g	79.80%	1.73E+00	100.72%
U-235	6.61E-02	2.4E-02	2.5E-02	1.75E-02	pCi/g	79.60%	7.90E-02	83.67%
U-238	1.78E+00	1.2E-01	2.2E-01	2.02E-02	pCi/g	79.60%	1.81E+00	96.94%
PU239/40	4.47E-01	6.2E-02	8.2E-02	5.79E-03	pCi/g	40.00%	4.52E-01	99.02%

Number of Results: 5

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